T-Link-EV5264/5268

User Manual

Rev 0.91

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AMENDMENT HISTORY

Version	Date	Description
V0.90	Oct, 2014	New release.
V0.91	May, 2015	1.修改 P4 文字及圖檔 2.修改 P6 文字 3.修改 P7 文字及圖檔 4.修改 P12 文字及圖檔 5.修改 P14 文字 6.修改 P17 文字 7.新增 P20 文字及圖檔 8.新增 P21 文字及圖檔 9.新增 P22 文字及圖檔 10.新增 P27 文字 11.修改 P29 圖檔 12.修改 P30 圖檔

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1. Outline

tenx(tenx technology)F51 & L51 Series single-chip is compatible with 8051,the user can use Keil uVision series of software as a development environment, this article will introduce the software and hardware configuration in Keil C.

2. Introduction

Figure 2-1 is T-Link-EV5264/5268 development board, the left portion is called EV5264/5268 Board and the right portion is called T-Link ICE Board to connect PC to use, the user can simulate TM52F5264/64B/68/68B through this development board, please refer to TM52F5264/64B/68/68B datasheet in detail.

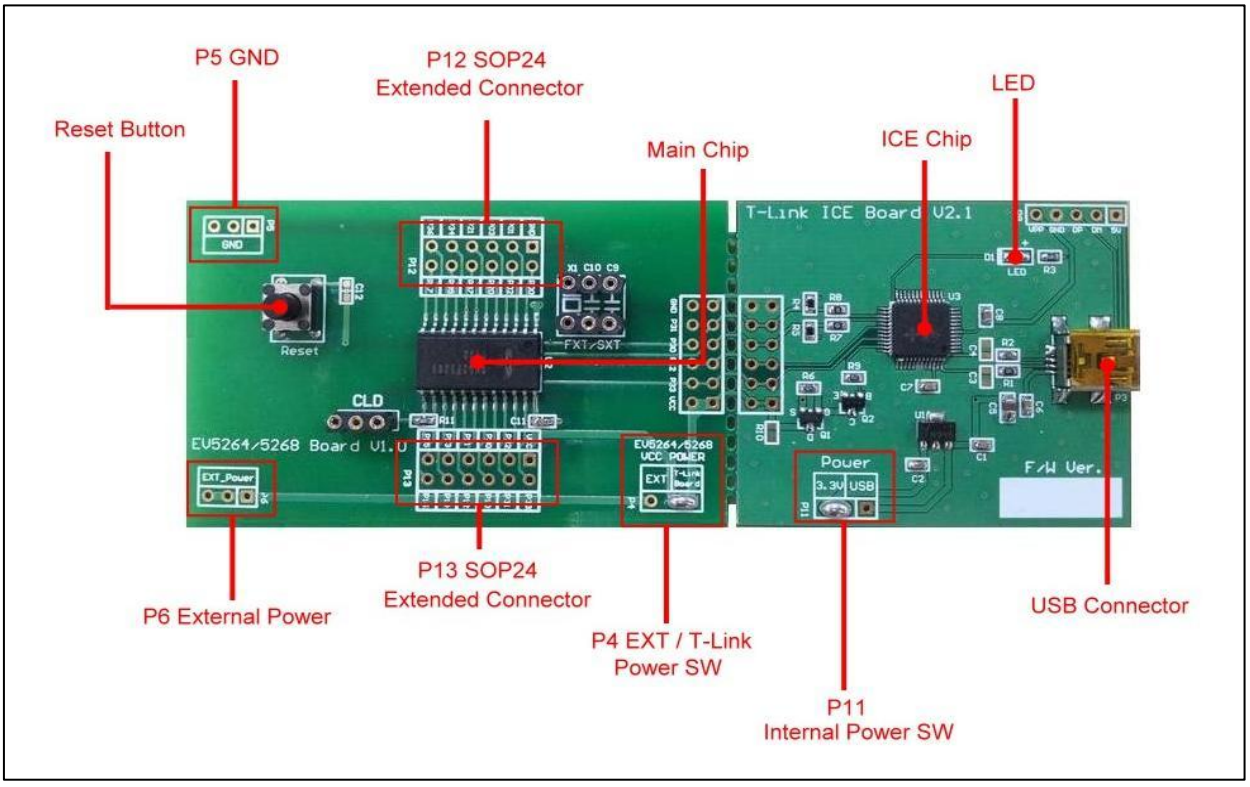
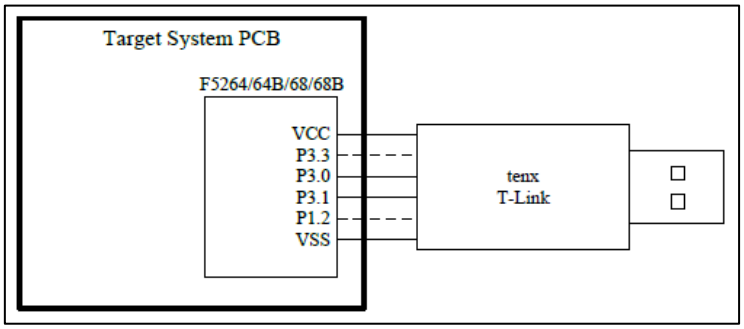


Figure 2-1. T-Link- EV5264/5268 Board



3. T-Link-EV5264/5268 Hardware Description

3.1 Power Setting

- P6: Connect to external power (EV5264/5268 Board)
- P4: Internal or external power source selection (EV5264/5268 Board)
- P11: Internal power selection (T-Link Board)

MCU Power	P11	P6	P4
External Power	USB or 3.3V	EXT_Power	EXT
Internal Power	USB or 3.3V	X	T-Link Board

3.2 USB Connecter

- P3: Mini USB connector to PC (T-Link Board)

3.3 Reset Button

- Reset: Reset Button (EV5264/5268 Board)

3.4 External Power Connecter

- P6: External VCC connecter (EV5264/5268 Board)
- P5: External GND connecter (EV5264/5268 Board)

3.5 MCU External Frequency-FXT/SXT

- X1: crystal FXT(1~8M) / SXT(32.768K) (EV5264/5268 Board)
- C9: matching capacitor (EV5264/5268 Board)
- C10: matching capacitor (EV5264/5268 Board)

3.6 PIN Assignment & Description

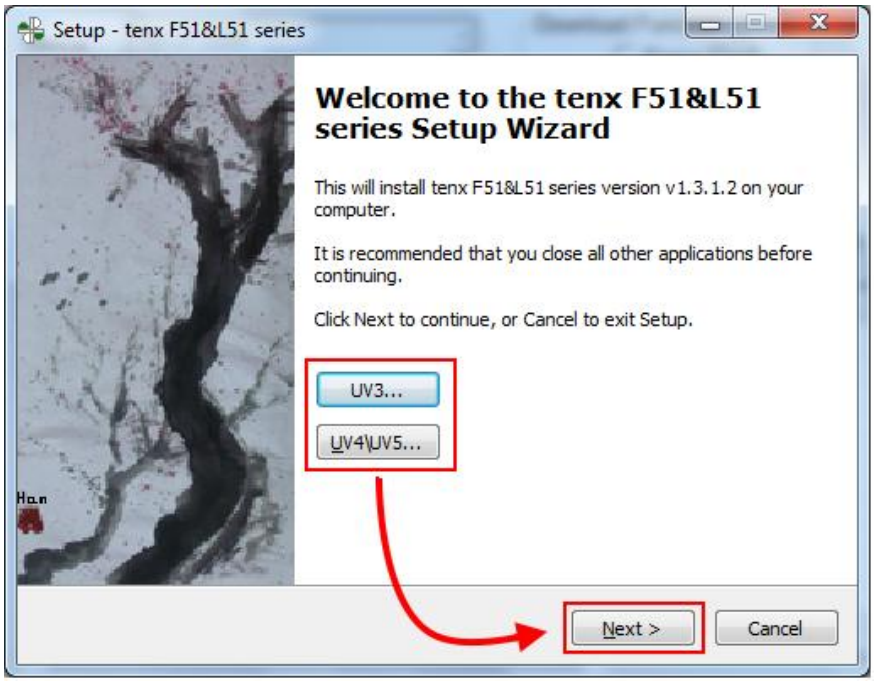
EV5264/5268 Board contains TM52F5264/64B/68/68B main chip, packaged is SOP 24-pin as shown below table for the pin assignment instructions.

Pin Number	Pin Name	Pin Number	Pin Name
1	VSS	13	TK9/P1.6
2	P0.0	14	CLD/AD9/P1.5
3	P0.1	15	TK8/AD8/CKO/P1.4
4	P0.2	16	TK3/AD7/PWM1A/P1.3
5	P0.3	17	TK2/AD6/PWM0A/P1.2
6	XI/P2.0	18	TK1/AD5/T2EX/P1.1
7	XO/P2.1	19	TK0/AD4/T2/P1.0
8	VPP/RSTn/INT2/P3.7	20	TK7/AD3/RXD/P3.0
9	TK13/$\overline{SS}$/T0/ P3.4	21	TK6/AD2/TXD/P3.1
10	TK12/MOSI/T1/ P3.5	22	TK5/AD1/INT0/P3.2
11	TK11/SCK/ P3.6	23	TK4/AD0/INT1/P3.3
12	TK10/MISO/ P1.7	24	VCC

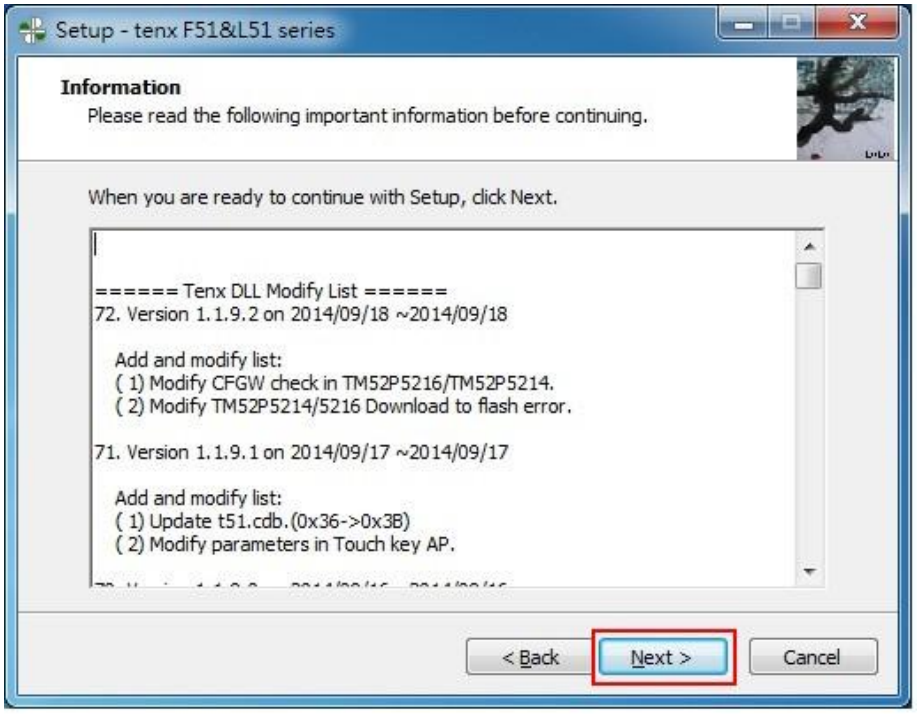
4. How to start using T-Link-EV5264/5268 simulation

First, Install the tenx TM52Dll IDE file to follow steps to complete the installation, the IDE & Keil C version must be installed in the same path, the default path is C: \ Keil:

4.1 Select Keil C version, click “Next>”


Setup - tenx F51&L51 series
Welcome to the tenx F51&L51 series Setup Wizard
This will install tenx F51&L51 series version v1.3.1.2 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
UV3...
UV4\UV5...
Next >
Cancel

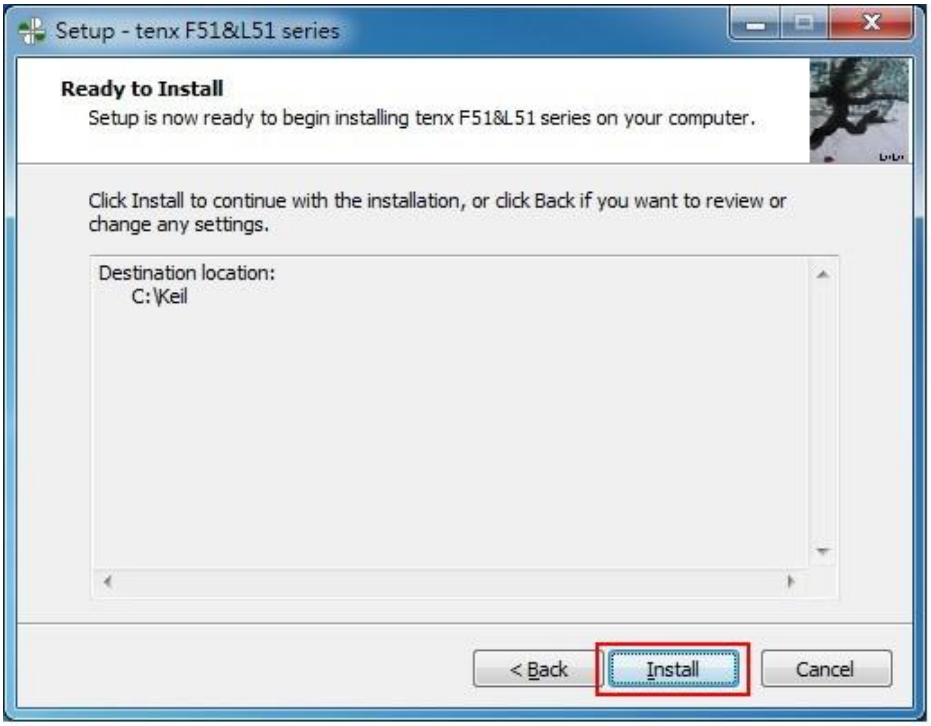
4.2 And then click “Next>”


Setup - tenx F51&L51 series
Information
Please read the following important information before continuing.
When you are ready to continue with Setup, click Next.
====== Tenx DLL Modify List ======
72. Version 1.1.9.2 on 2014/09/18 ~2014/09/18
Add and modify list:
(1) Modify CFGW check in TM52P5216/TM52P5214.
(2) Modify TM52P5214/5216 Download to flash error.
71. Version 1.1.9.1 on 2014/09/17 ~2014/09/17
Add and modify list:
(1) Update t51.cdb.(0x36->0x3B)
(2) Modify parameters in Touch key AP.
< Back
Next >
Cancel

4.3 The default path is C:\Keil, click “Next>”

Setup - tenx F51&L51 series
Select Destination Location
Where should tenx F51&L51 series be installed?
Setup will install tenx F51&L51 series into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Keil
Browse...
At least 2.7 MB of free disk space is required.
< Back
Next >
Cancel

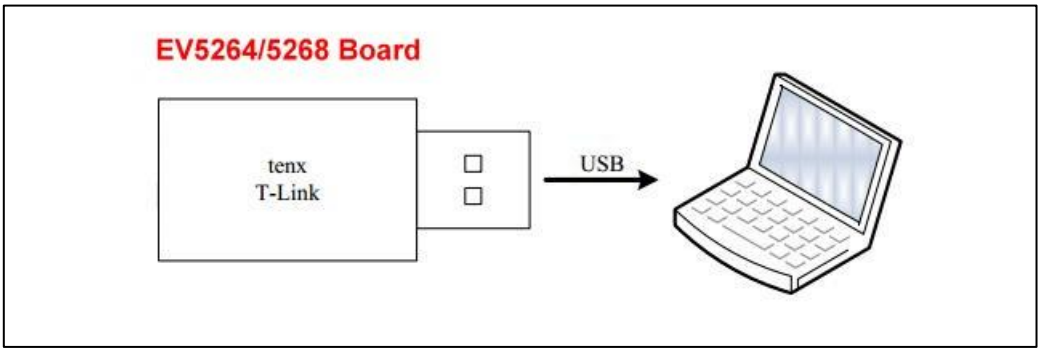
4.4 Click “Install”


Setup - tenx F51&L51 series
Ready to Install
Setup is now ready to begin installing tenx F51&L51 series on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Keil
< Back
Install
Cancel

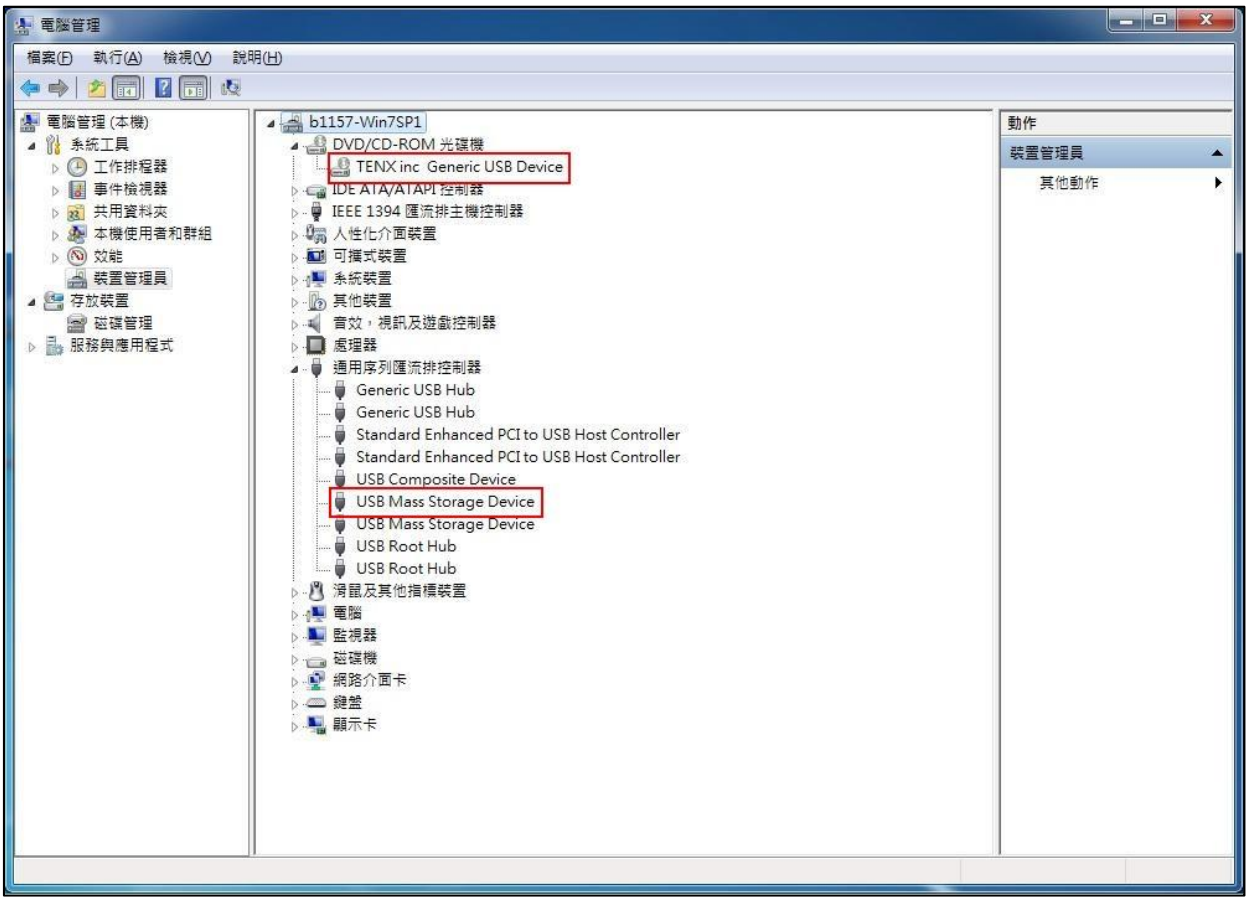
4.5 Click “Finish” to complete the installation

Setup - tenx F51&L51 series
Completing the tenx F51&L51 series Setup Wizard
Setup has finished installing tenx F51&L51 series on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Finish

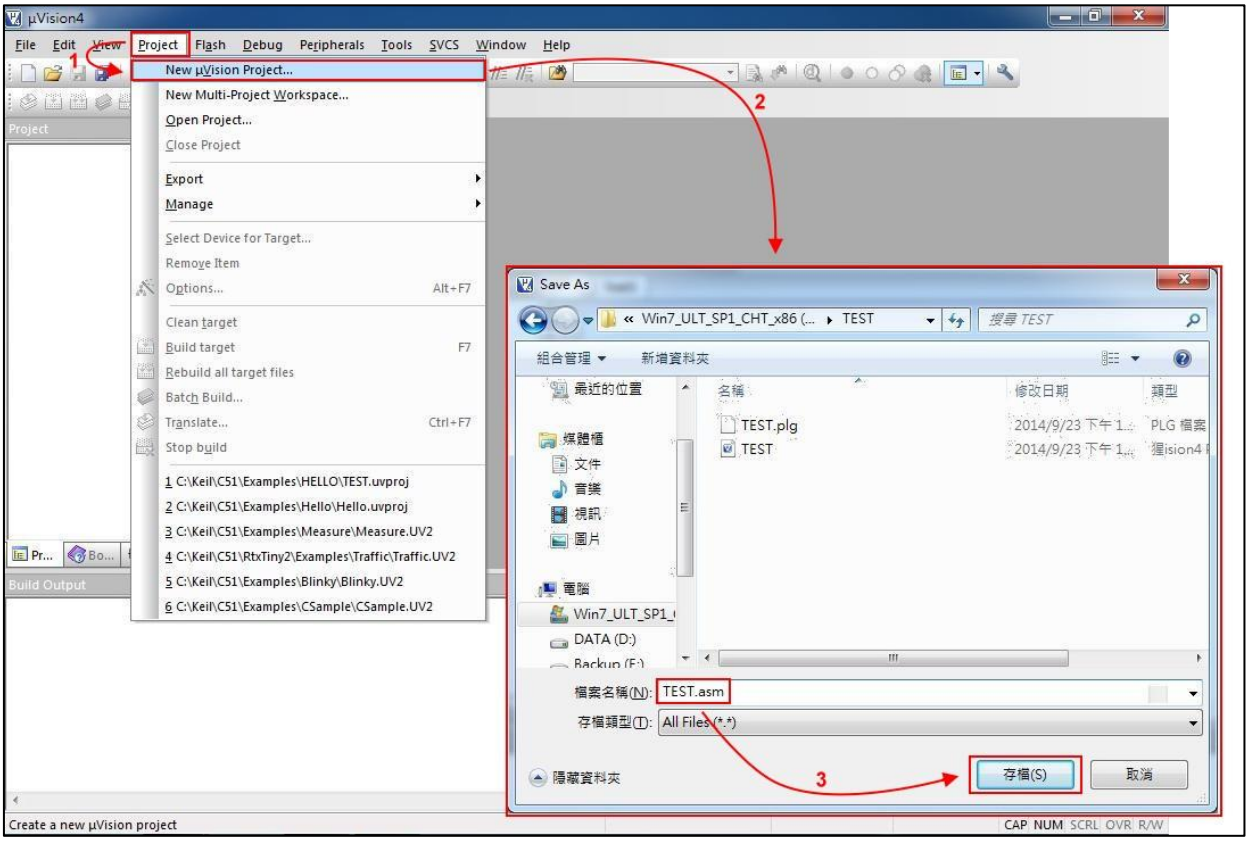
4.6 Connect T-Link-EV5264/5268 Board of USB(mini type) connector to PC

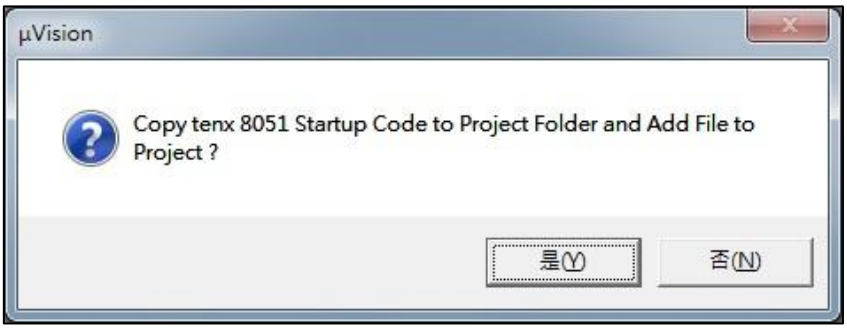


4.7 Confirm Device Manger

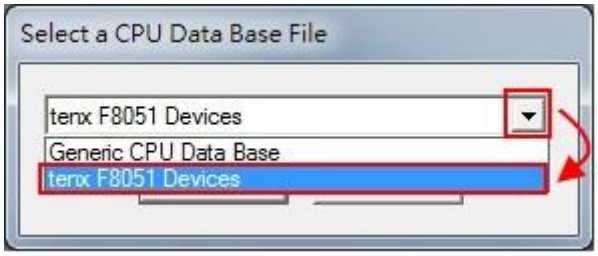


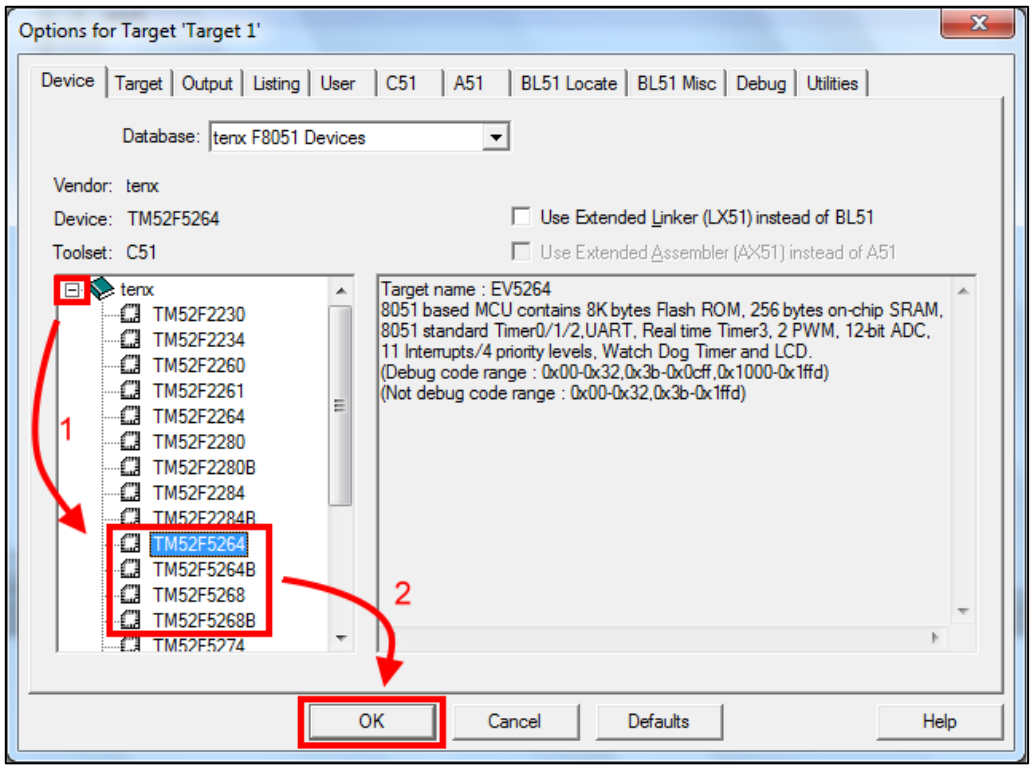
4.8 Open the KEIL C→Click the Project menu and select New Project window→Fill in the project name and click Save Project→Copy tenx 8051 Startup Code or not?





4.9 CPU Data Base selection dialog box will be show up→Select the tenx F8051 Devices and click on OK button→Select a CPU model (for EV Board model), refer to Note (1) and the right window shows some of the parameters of this single chip model.

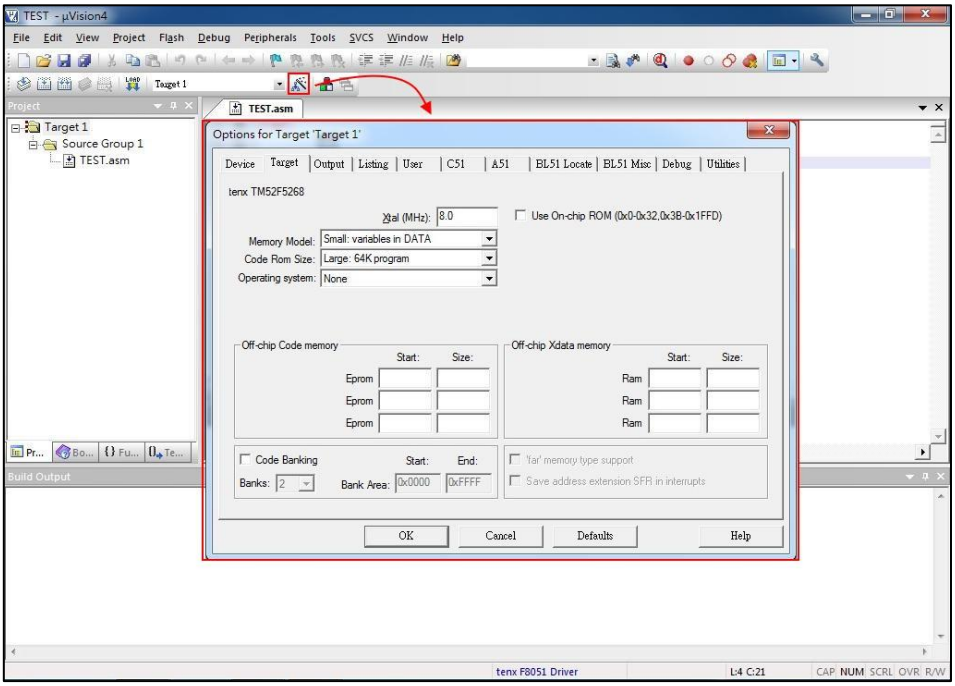




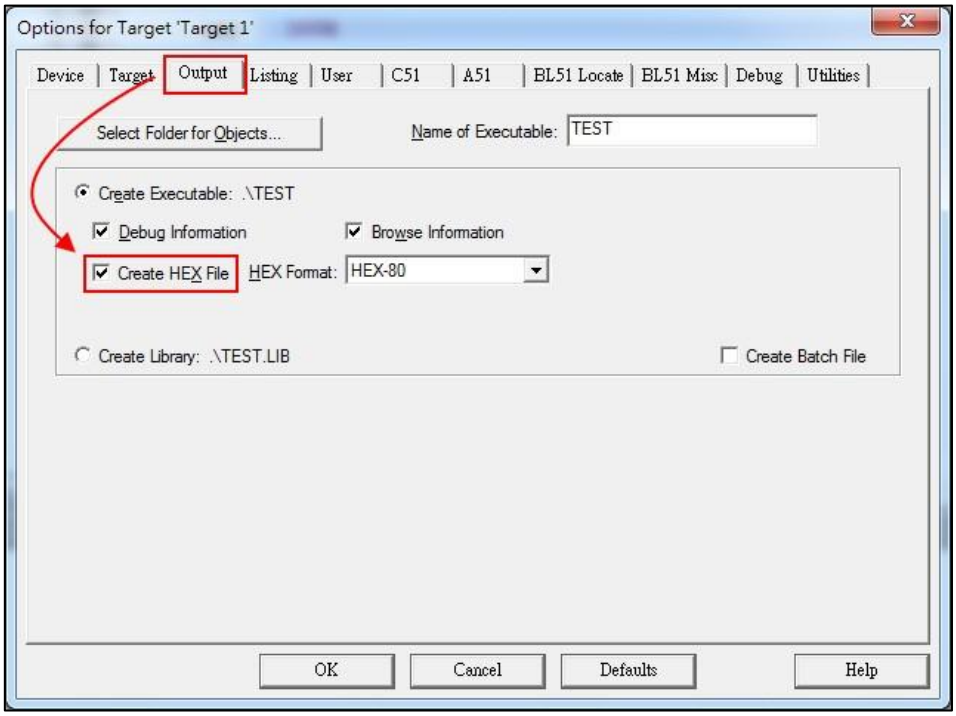
Note (1)：TM52F5264/64B/68/68B(For EV Board model)

Chip Model	EV Board Model
TM52F5264/64B	EV5264/5268
TM52F5268/68B	

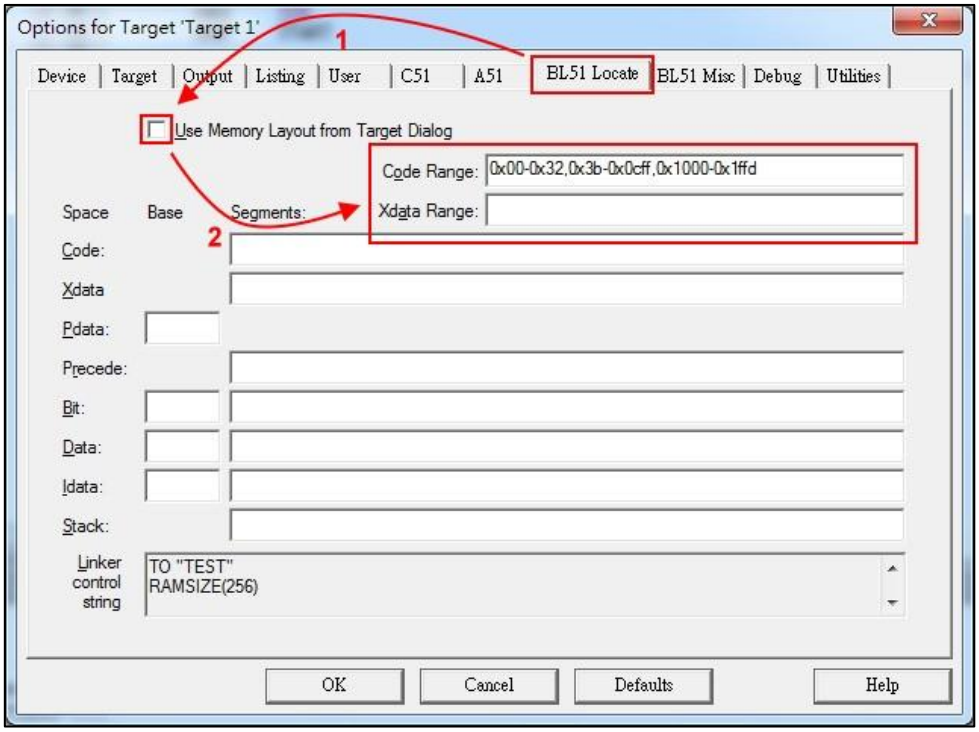
4.10 Option for Target dialog box settings: Click the "Option for Target" button in the main menu, the project file is created must also be relevant to the project file settings as shown below.



4.11 Output dialog box settings: To confirm "Create HEX File" option is checked, as shown below.


Options for Target 'Target 1'
Device Target Output Listing User C51 A51 BL51 Locate BL51 Misc Debug Utilities
Select Folder for Objects...
Name of Executable: TEST
Create Executable: .\TEST
Debug Information
Browse Information
Create HEX File
HEX Format: HEX-80
Create Library: .\TEST.LIB
Create Batch File
OK Cancel Defaults Help

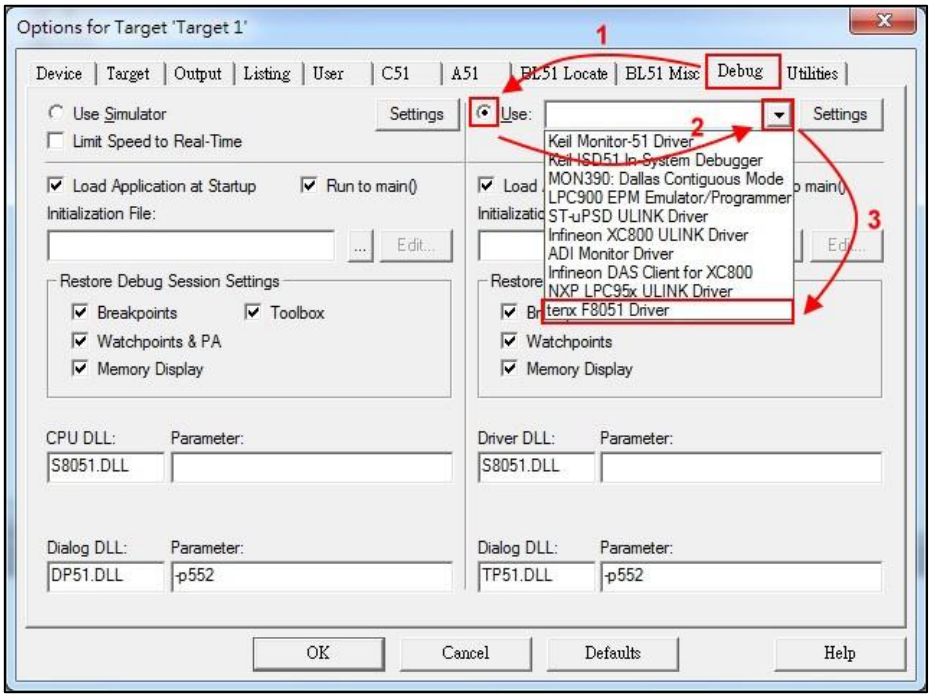
4.12 BL51 Locate dialog box settings: Unchecked "Use Memory Layout from Target Dialog" in BL51 Locate option and fill in Code Range (Note：The chip code available range has divided into download mode and debug mode，please refer to Note (2)）



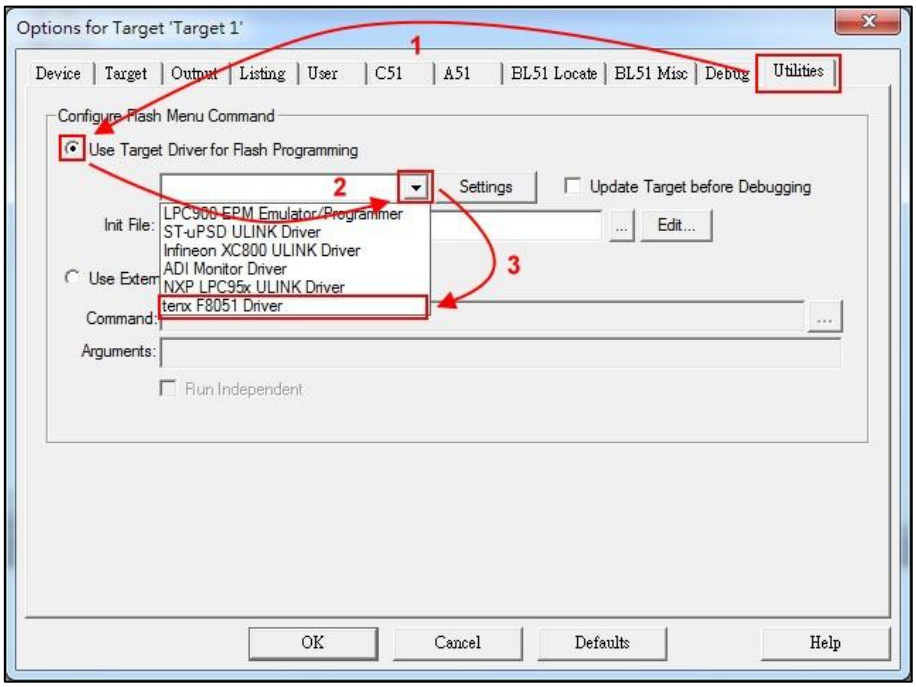
Note (2): TM52F5264/64B/68/68B(EV5264/5268) Code Range area (Program ROM)

Chip Model	Code Range	
	Download Mode	Debug Mode
TM52F5264/64B/68/68B (EV5264/5268)	0x00-0x32,0x3b-0x1ffd	0x00-0x32,0x3b-0x0cff, 0x1000-0x1ffd

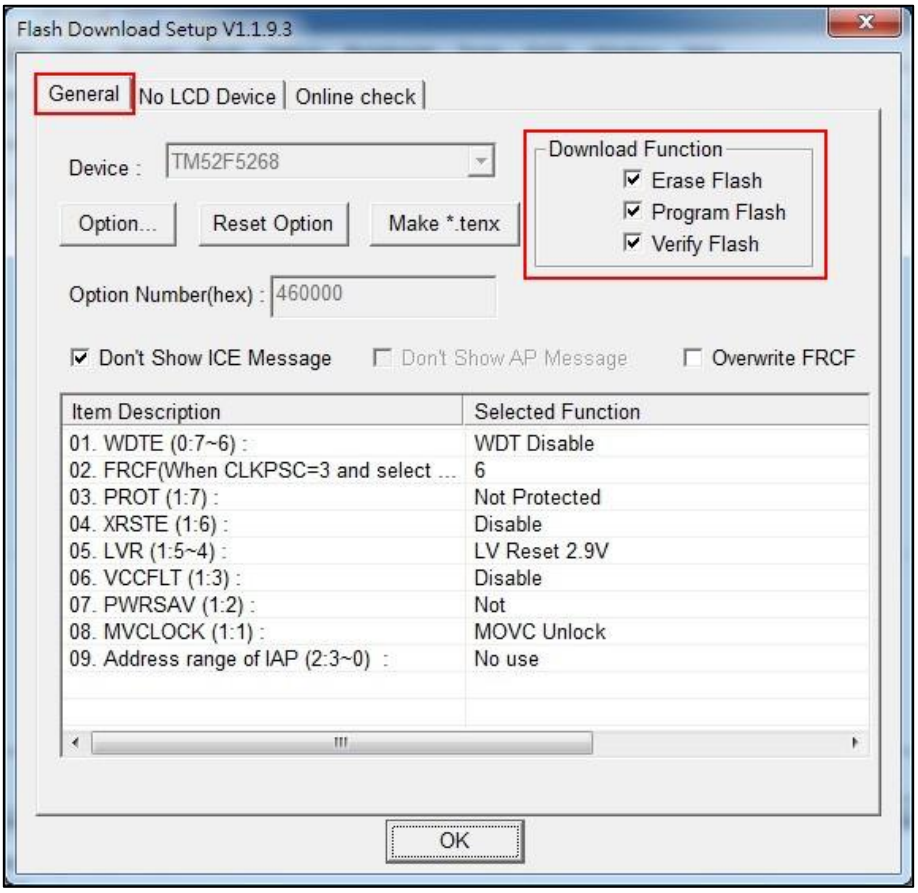
4.13 Debug dialog box settings: Click on "Use:" option, and then select "tenx F8051 Driver" as shown below.



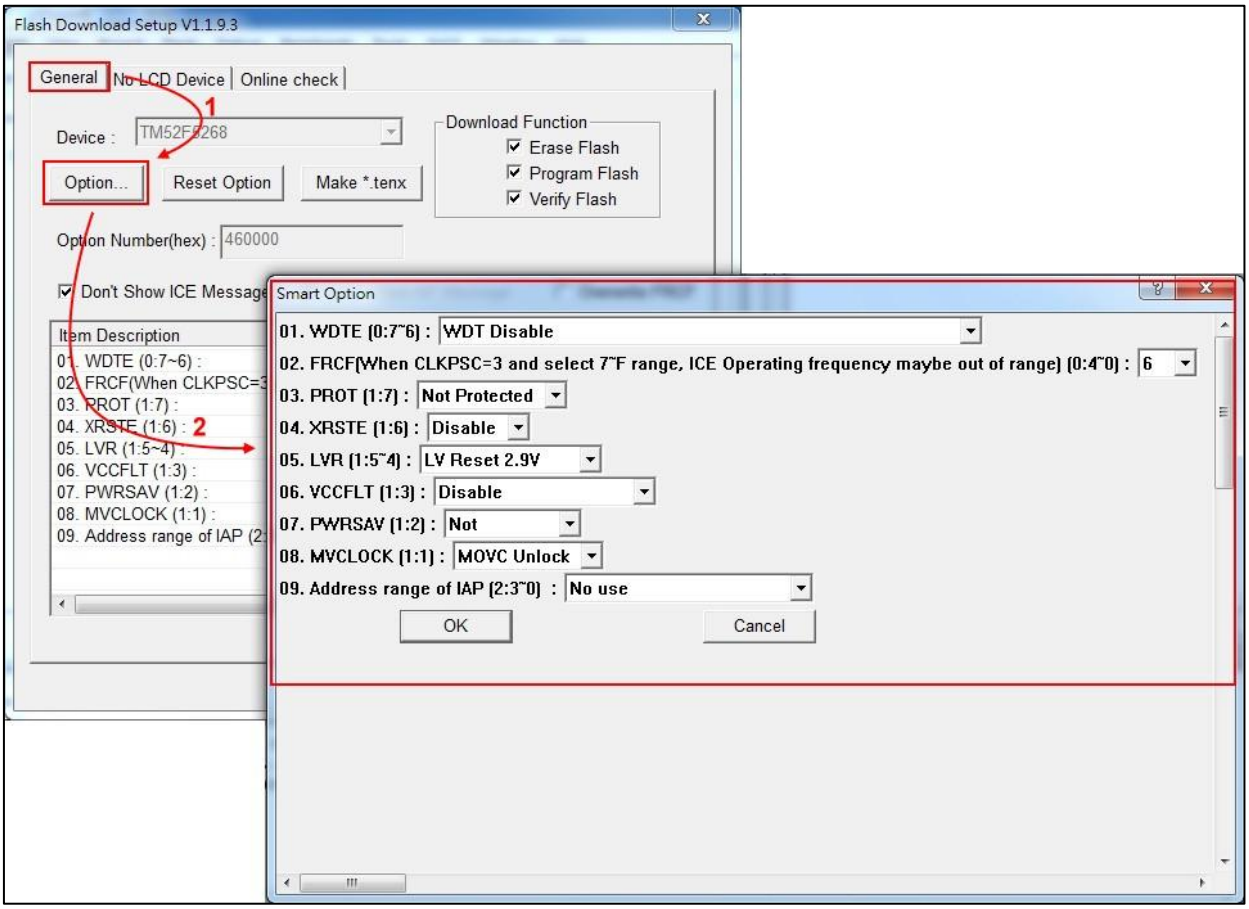
4.14 Utilities dialog box settings: Click on "Use Target Driver for Flash Programming" option and select "tenx F8051 Driver" as shown below.



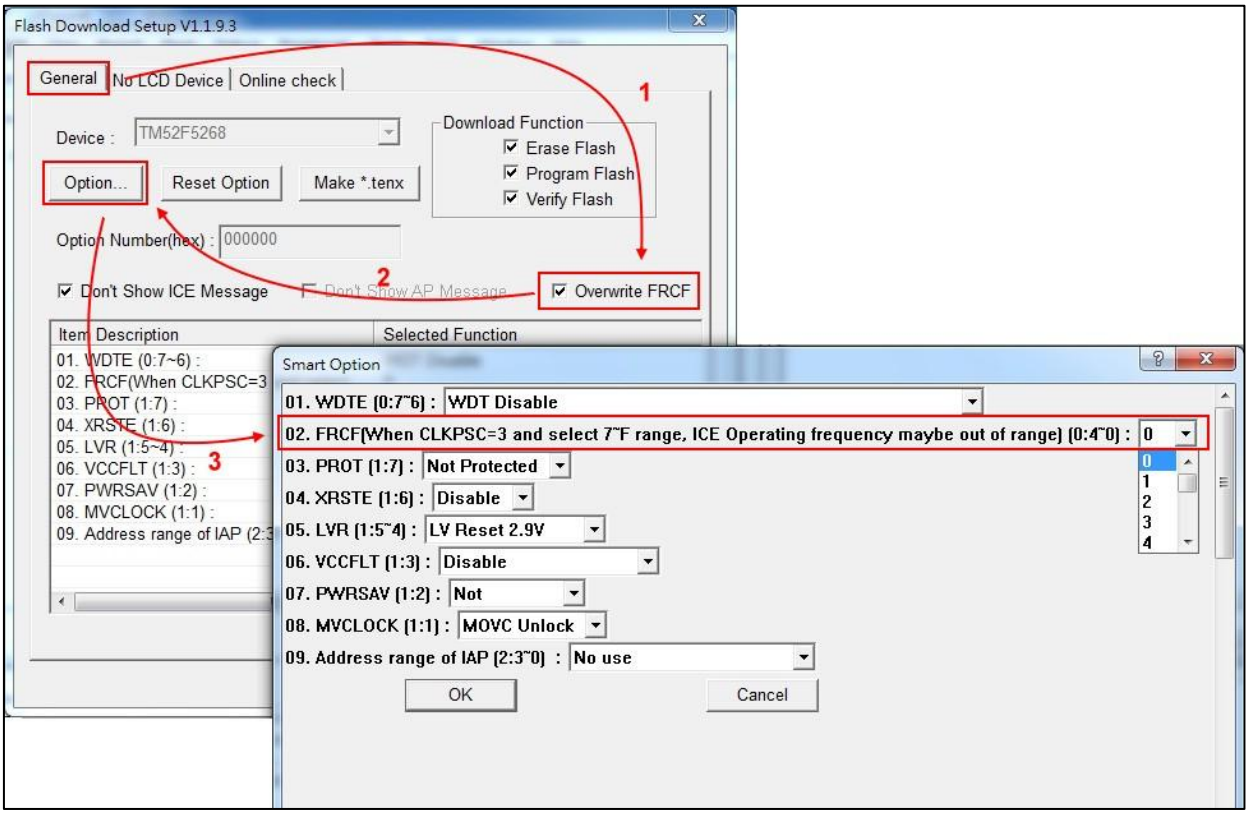
4.15 Click on “settings” button and the “Flash Download Setup” window will be show up, check the “Download Function” desired option as shown below.



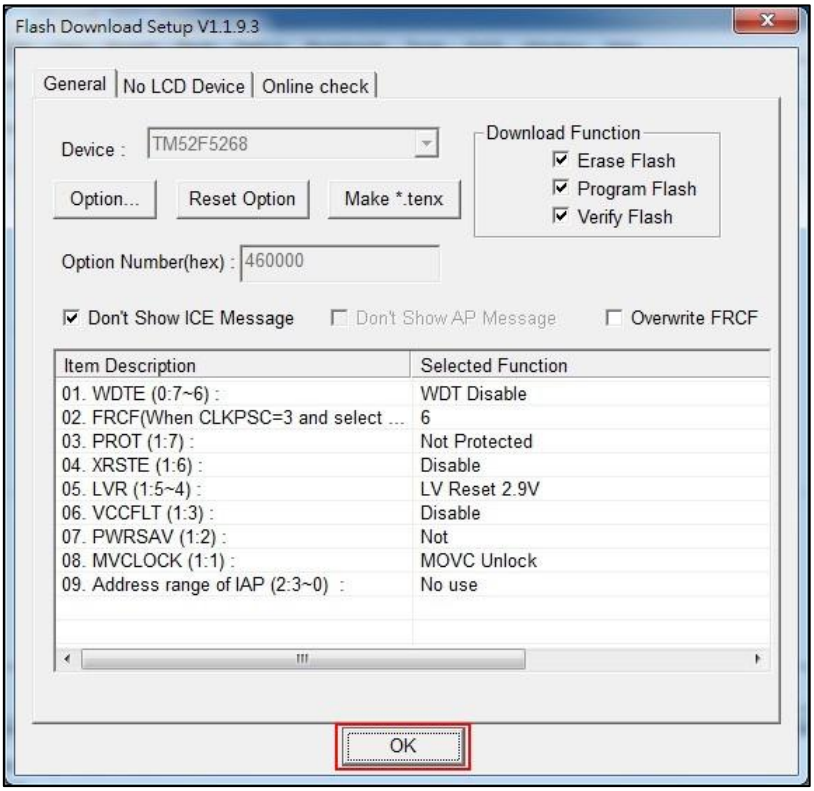
4.16 Click on "Option" button, and the "Smart Option" will be show up, about the option configuration, please refer to TM52F5264/64B/68/68B datasheet.

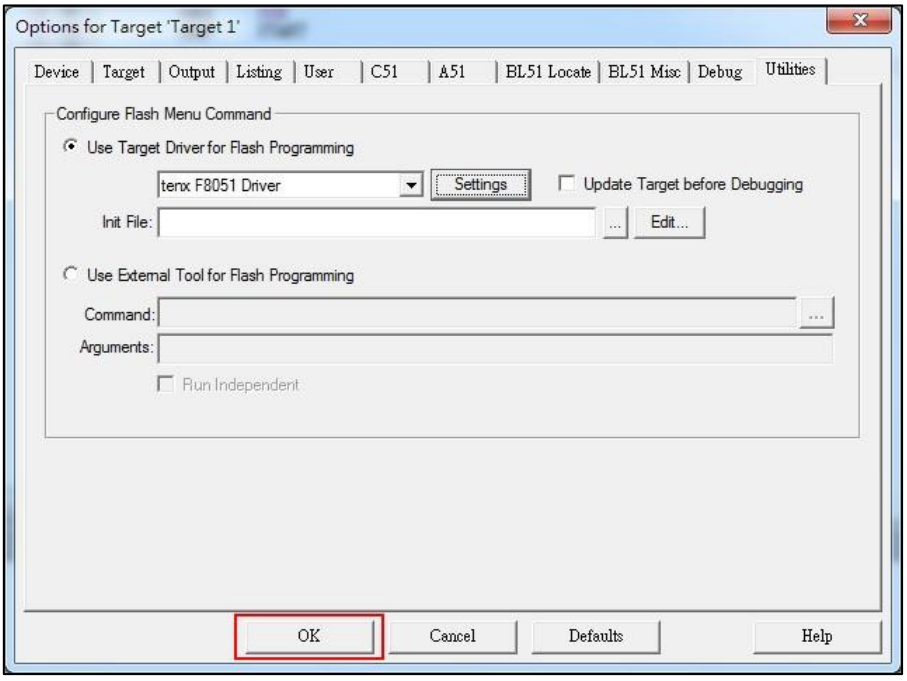


4.17 FRCF (Fast Internal RC）settings: Click on “Option” button after the “Overwrite FRCF” is checked, the user can adjustment 32 frequency levels (The default is 7.3Mhz).



4.18 Click on “OK” to return to “Flash Download Setup” window, and then click on “OK” to return to “Utilities” window, this all new project configuration is complete and click on “OK” to exit the “Option for Target” window, the user can start programming now. （Note：To change chip model ,user needs to confirm “Code Range” and “Option” settings, the “Open Project” will save the settings and the “New Project” will be default settings in the “Option” dialog box）

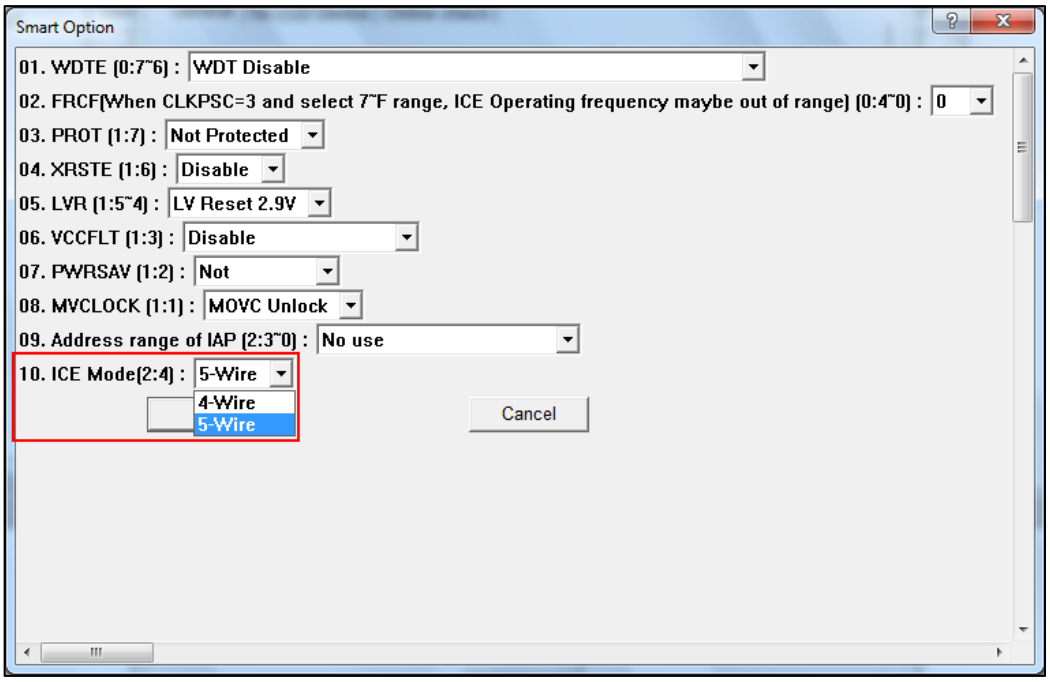




5. How to use four wires to program or simulate by T-Link Board

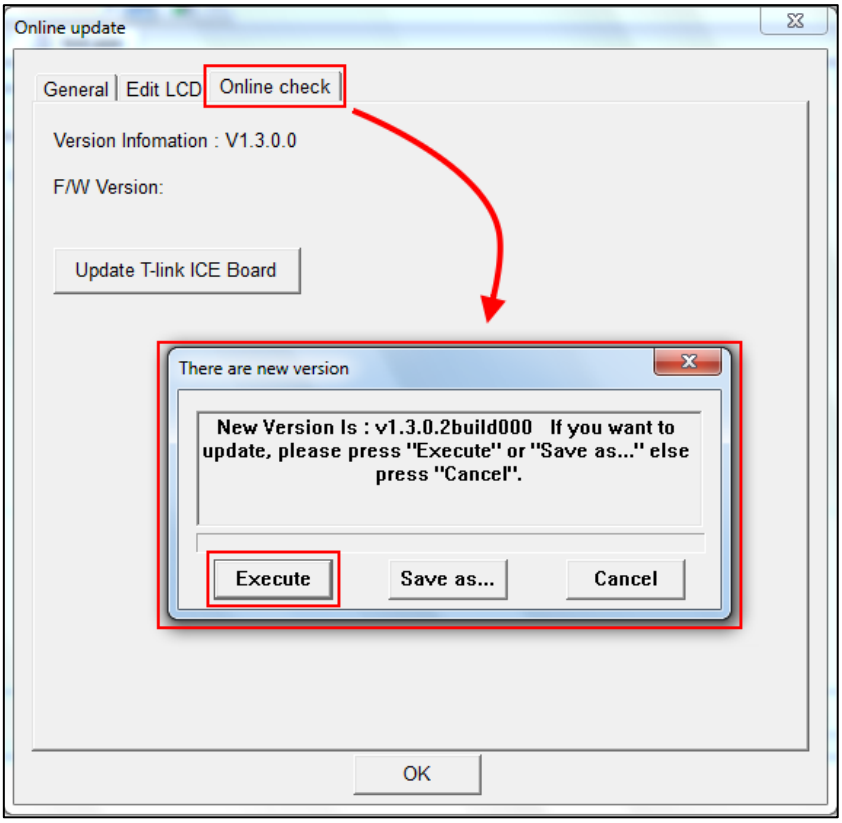
The T-Link ICE Board can use four wires(VCC,VSS,P3.0,P3.1) or five wires (VCC,VSS,P3.0,P3.1,P3.3) to program, user must to select 4-wire in “Utilities dialog box settings”.

5.1 Utilities dialog box settings: Click on “Option” button, and select 4-Wire, as shown below.

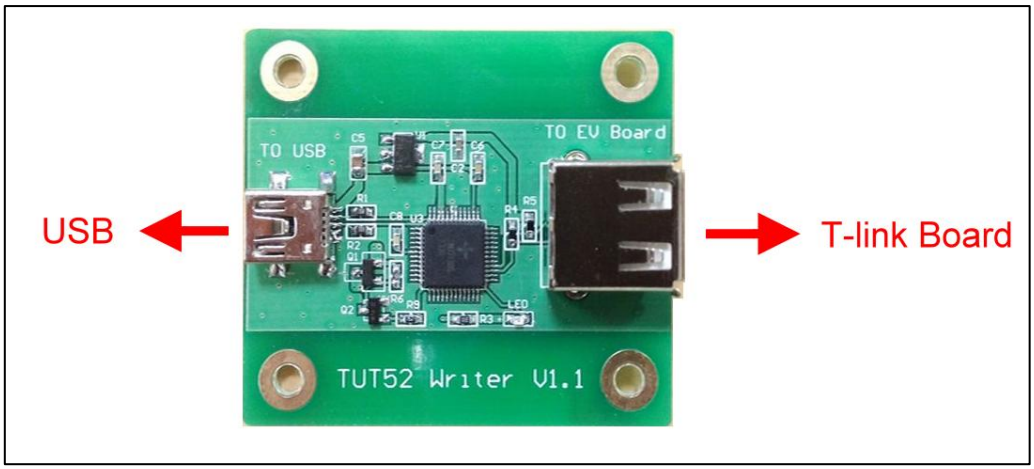

Smart Option
01. WDTE (0:7~6) : WDT Disable
02. FRCF(When CLKPSC=3 and select 7~F range, ICE Operating frequency maybe out of range) (0:4~0) : 0
03. PROT (1:7) : Not Protected
04. XRSTE (1:6) : Disable
05. LVR (1:5~4) : LV Reset 2.9V
06. VCCFLT (1:3) : Disable
07. PWRSAV (1:2) : Not
08. MVCLOCK (1:1) : MOVC Unlock
09. Address range of IAP (2:3~0) : No use
10. ICE Mode(2:4) : 5-Wire
4-Wire
5-Wire
Cancel

6. How to update tenx IDE & T-Link F/W

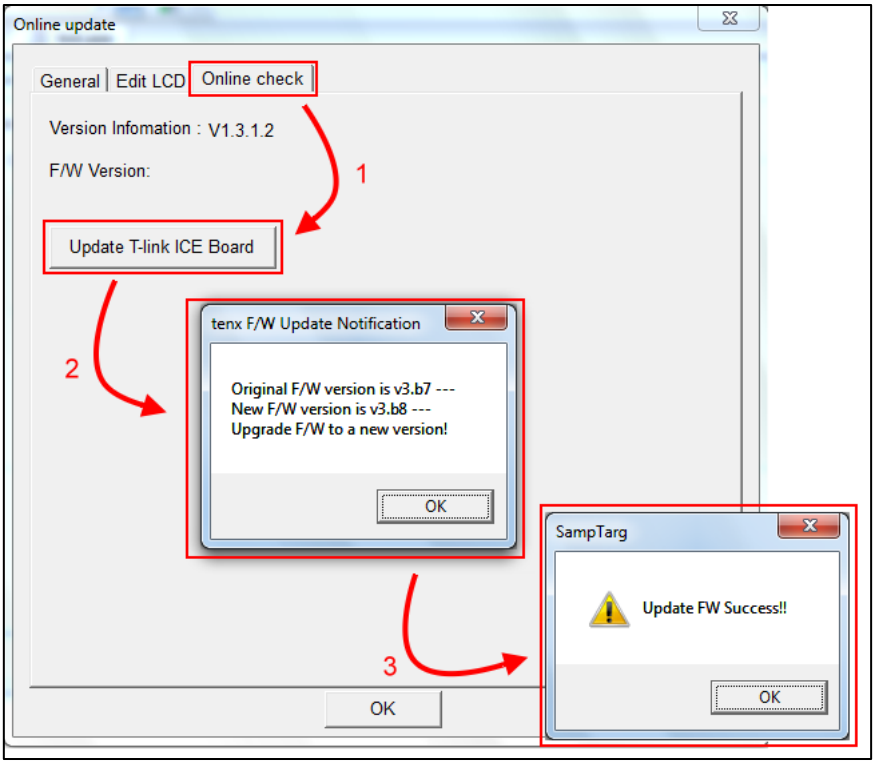
6.1 Update tenx IDE: Click on “Online check” button, and Update the TM52Dll IDE in Utilities dialog box, as shown below.



6.2 Update T-Link F/W: Connect TUT52 Writer to USB and T-Link Board, as shown below.



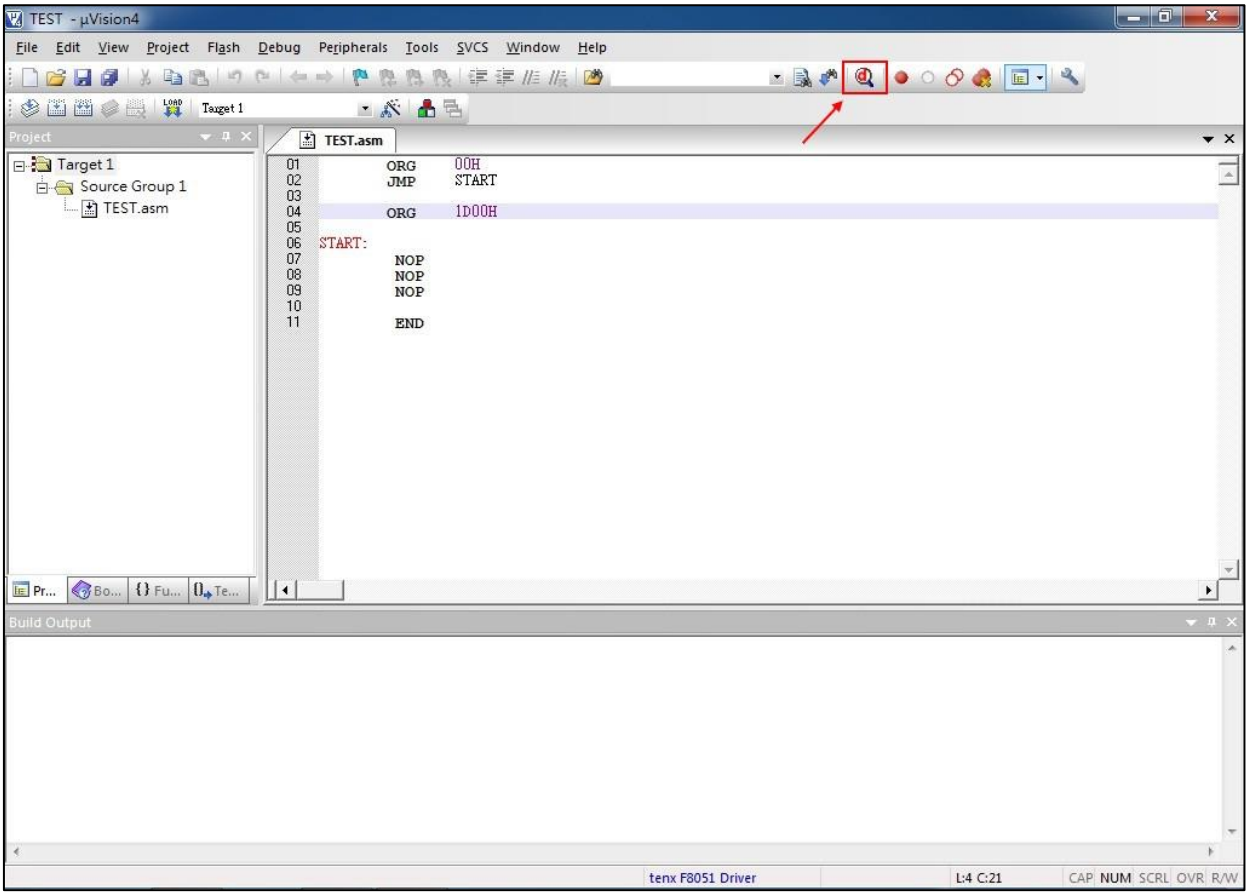
6.3 Click on “Update T-Link ICE Board” button to update T-Link Board F/W, as shown below.



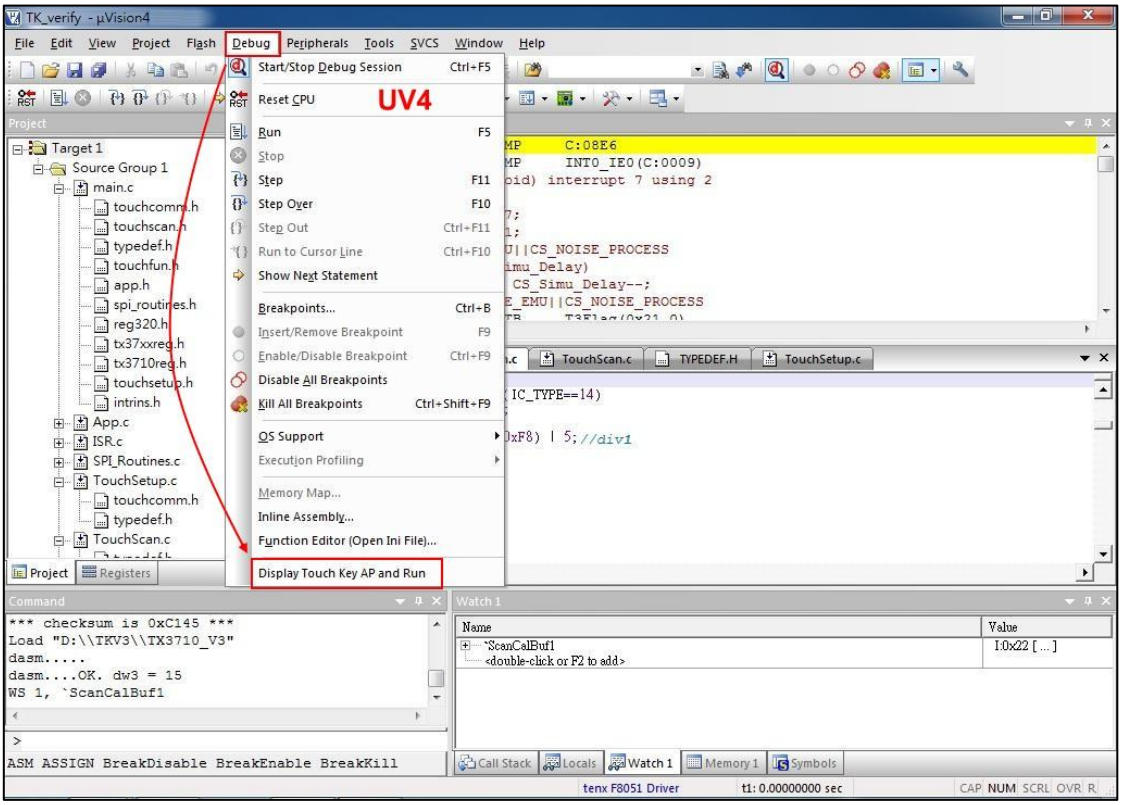
7. How to use Touch Key Application

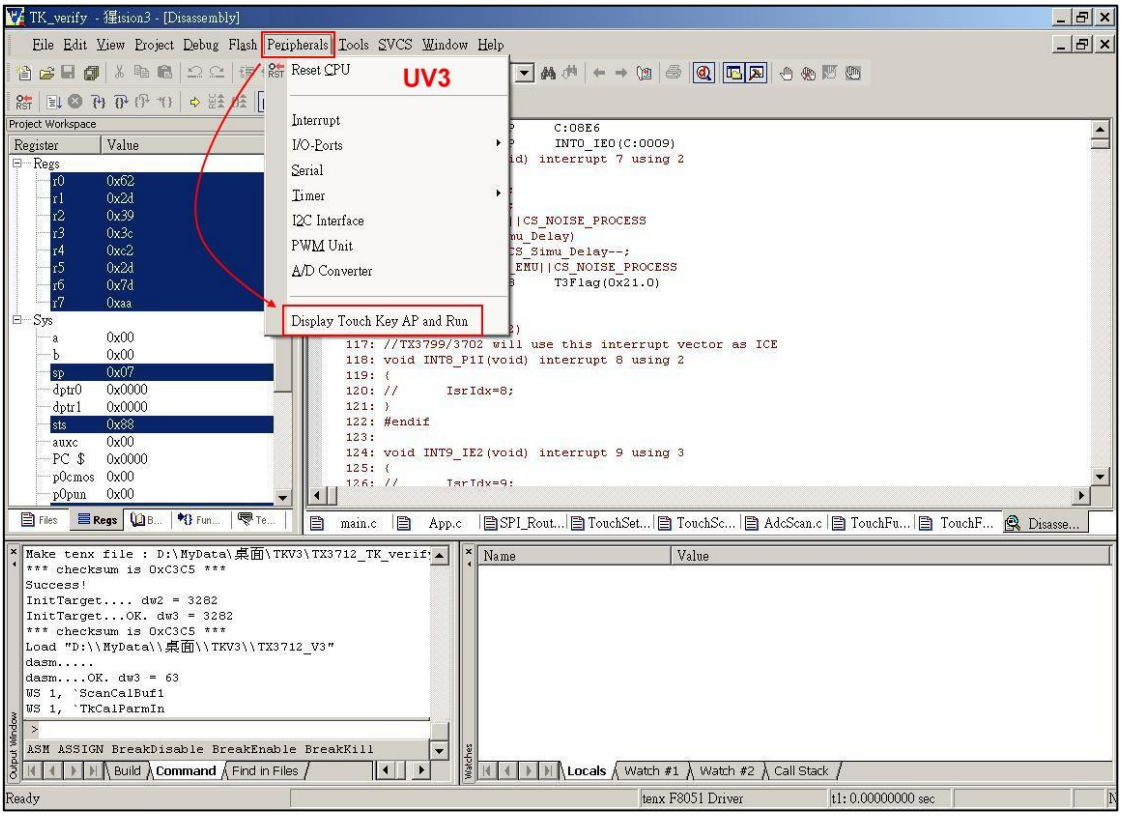
The Touch Key Application work in Debug Mode, user can use application to view the results of TK Data. The TK Data must be stored in XRAM and IRAM range, as shown below.

7.1 Click on “Debug” into Debug mode.

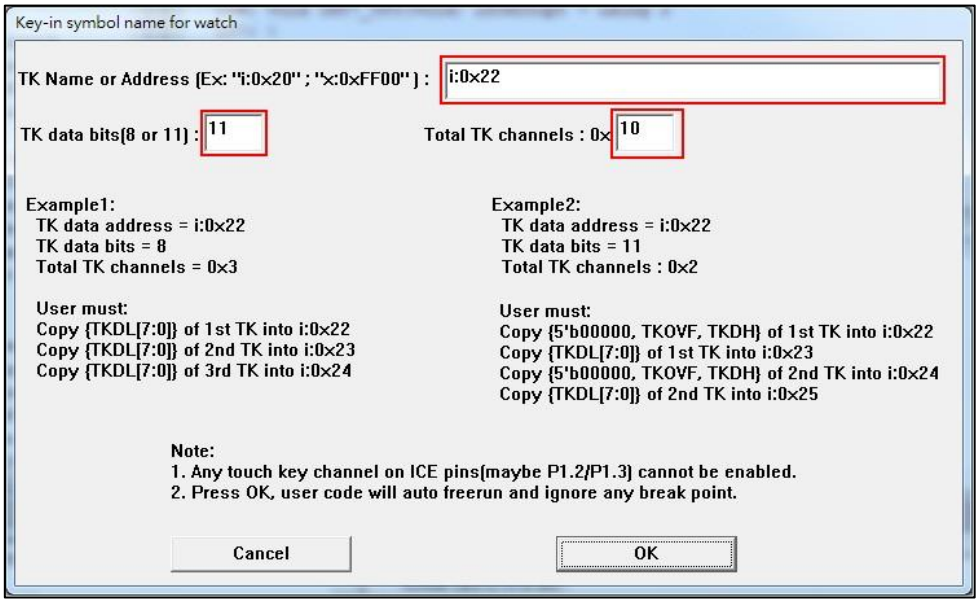


7.2 Click the Debug menu and select “Display Touch Key AP and Run”.

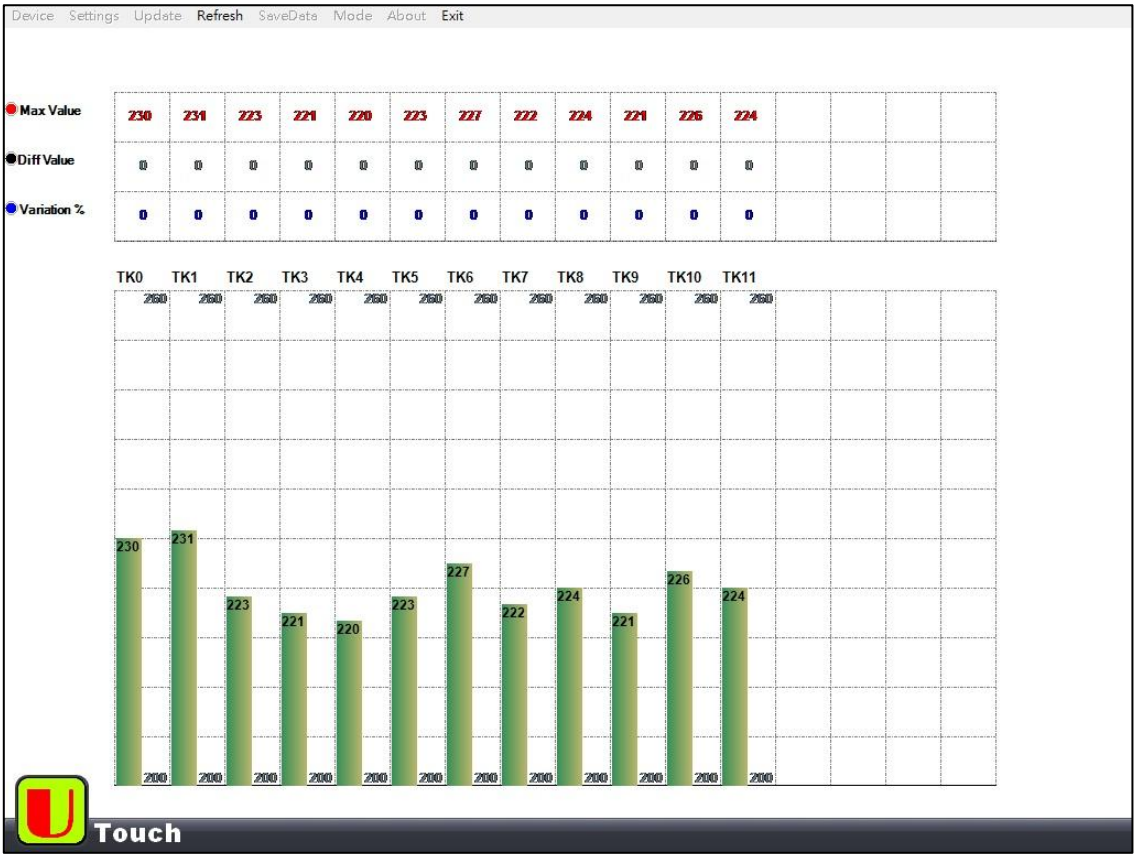




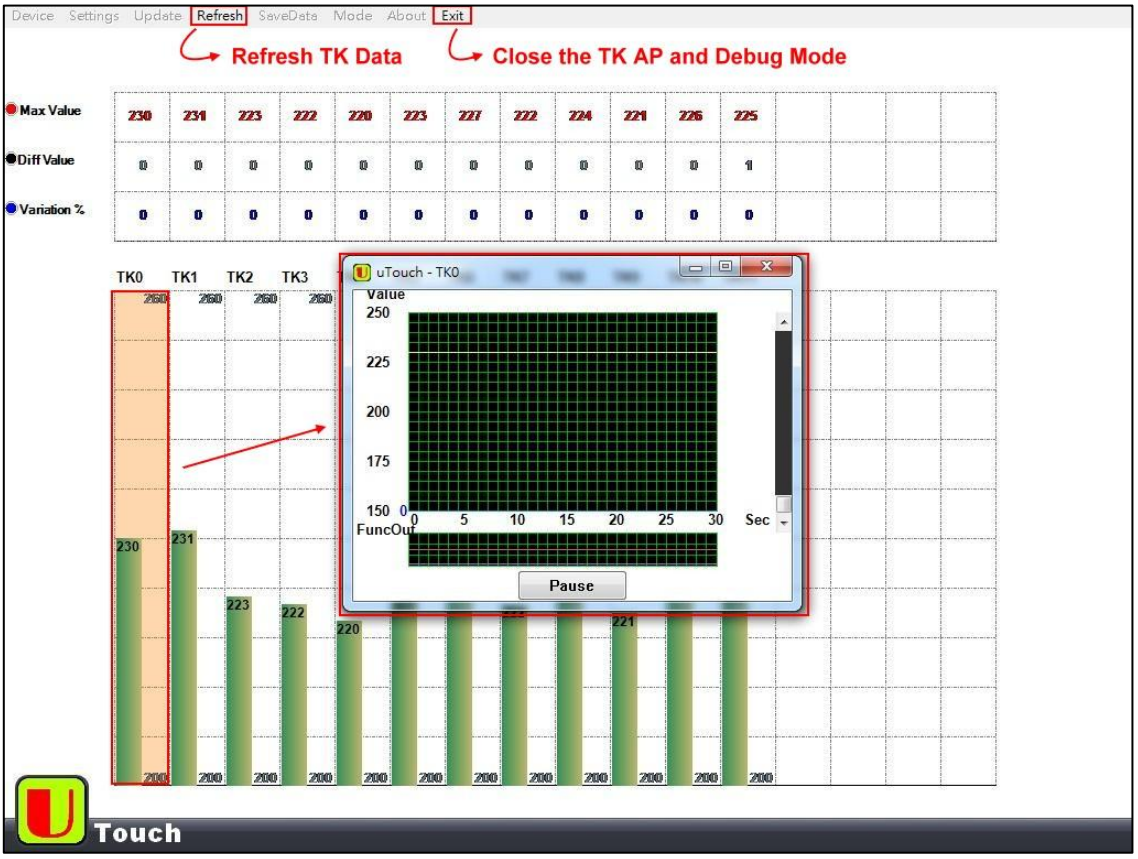
7.3 Fill in TK Data, ex: TK name(address) and TK Bits and Total TK Channels.


Key-in symbol name for watch
TK Name or Address (Ex: "i:0x20" ; "x:0xFF00") :
i:0x22
TK data bits(8 or 11) :
11
Total TK channels : 0x
10
Example1:
TK data address = i:0x22
TK data bits = 8
Total TK channels = 0x3
User must:
Copy {TKDL[7:0]} of 1st TK into i:0x22
Copy {TKDL[7:0]} of 2nd TK into i:0x23
Copy {TKDL[7:0]} of 3rd TK into i:0x24
Example2:
TK data address = i:0x22
TK data bits = 11
Total TK channels : 0x2
User must:
Copy {5'b00000, TKOVF, TKDH} of 1st TK into i:0x22
Copy {TKDL[7:0]} of 1st TK into i:0x23
Copy {5'b00000, TKOVF, TKDH} of 2nd TK into i:0x24
Copy {TKDL[7:0]} of 2nd TK into i:0x25
Note:
1. Any touch key channel on ICE pins(maybe P1.2/P1.3) cannot be enabled.
2. Press OK, user code will auto freerun and ignore any break point.
Cancel
OK

7.4 Click on “OK” button, and the “TK AP” will be show up.


Device Settings Update Refresh SaveData Mode About Exit
Max Value
Diff Value
Variation %
TK0 TK1 TK2 TK3 TK4 TK5 TK6 TK7 TK8 TK9 TK10 TK11
230 231 223 221 220 223 227 222 224 221 226 224
Touch

7.5 TK AP Function, as shown below.



8. LVR Setting Notes

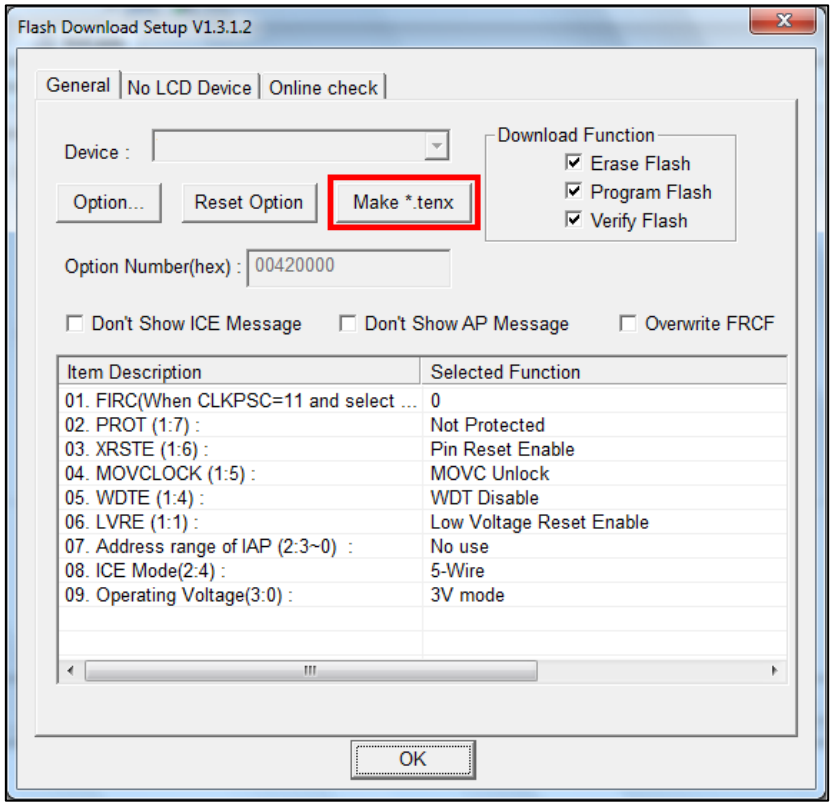
System clock		LVR Options(Minimum)					
Source	**Frequency**	M5254 M5258 F5284 F5288	F5284B F5288B	F5264 F5268 F5274 F5278	F5264B F5268B F5274B F5278B	F2280 F2284 F2230 F2234	F2280B F2284B F2230B F2234B
FXT/2	8MHz		2.9V	2.9V	2.9V		2.9V
FRC/1	7.3MHz						2.8V
FXT/2	6MHz	2.9V	2.9V	2.9V	2.9V	2.6V	2.6V
FXT/2	4MHz	2.3V	2.3V	2.3V	2.3V	2.4V	2.4V
FRC/2	3.7MHz						
FXT/2, /4	2MHz	1.9V	1.9V	1.8V	1.8V	2.4V	2.4V
FRC/4	1.8MHz						
FXT/2, /4	1MHz	1.9V	1.9V	1.8V	1.8V	1.5V	1.5V
FRC/8	0.9MHz						

Note: Please refer to TM52XXXX_02SV11 AP Note for more information.

9. Q & A

Q1: How to program a user file on TWR98 Writer?

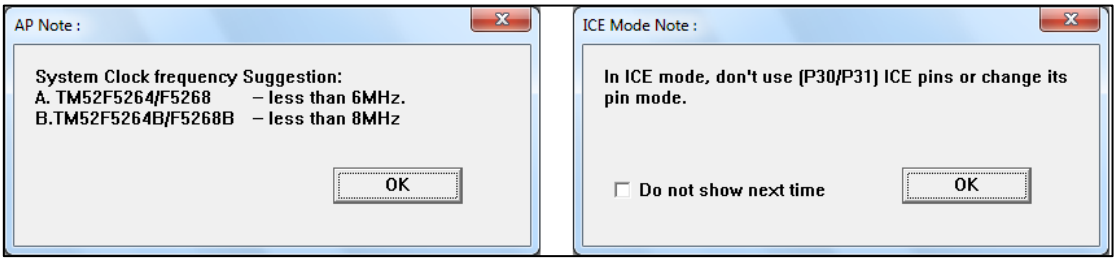
A1: The User must make " *.tenx " file to program in "Utilities dialog box settings" , or enter " Download Mode" and "Debug Mode", as shown below.



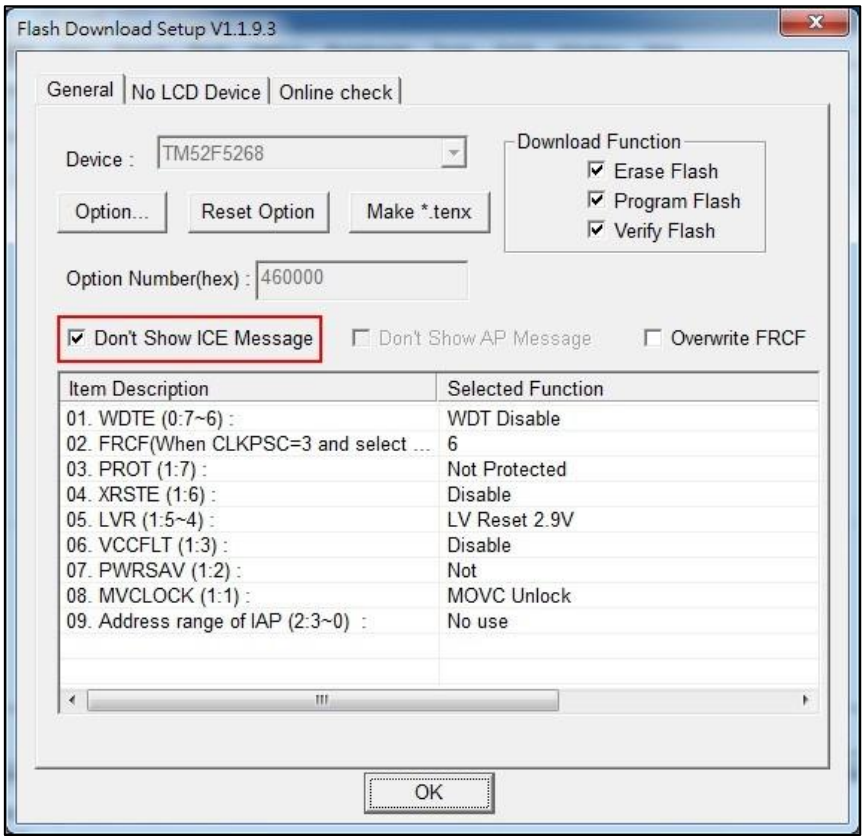
Q2: How to use UV3 and UV4 version in the same time?

A2: If user wants to install UV3 and UV4 version in the default path(UV3 & UV4 version in C:\Keil) in the same time, the user musts to change C51 folder name(because there will be two C51 folders), and then install tenx F51 & L51 IDE file, if user needs to use UV3 version, the UV4 version must to change C51 folder name. However, the user wants to install UV3 and UV4 version in the different path(UV3 version in C:\Keil, UV4 version in D:\Keil), the tenx F51 & L51 IDE & Keil C version(UV3 or UV4) must be installed in the same path.

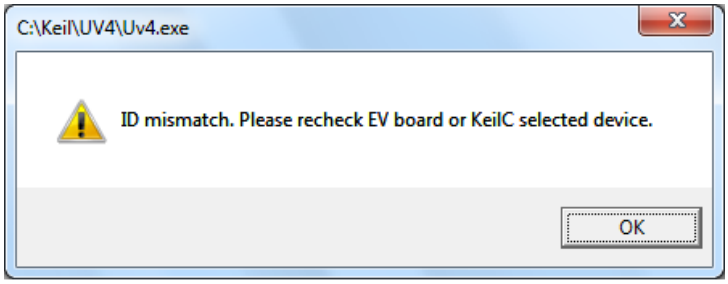
Q3: Why the user clicks on "Debug" button as shown below window?


AP Note :
System Clock frequency Suggestion:
A. TM52F5264/F5268 – less than 6MHz.
B.TM52F5264B/F5268B – less than 8MHz
OK
ICE Mode Note :
In ICE mode, don't use (P30/P31) ICE pins or change its pin mode.
Do not show next time
OK

A3: When the user writes program file must be avoid to control P3.0、P3.1 pin(For example：P3 Mode configuration change)，if do not show this window in the next time，please check "Do not show next time" option, or to confirm "Don't Show ICE Message is checked in the "Flash Download Setup " window.

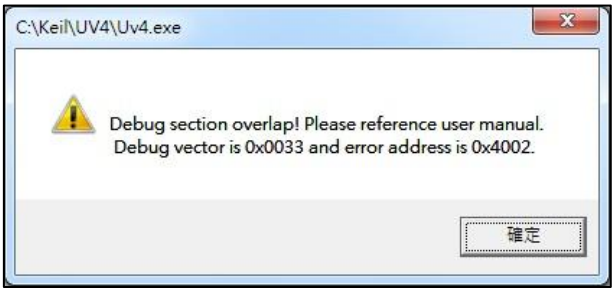


Q4: Why the user clicks on "Debug" button as shown below window, and then exit the "Debug Mode" ?



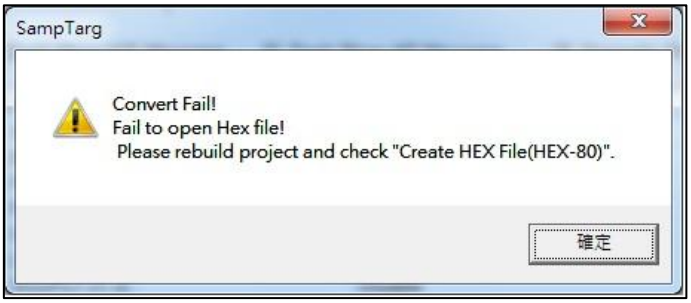
A4: Because the user selects chip model and EV Board model does not match, please recheck chip model and EV Board model.

Q5: Why the user clicks on "Debug" button or "Download" button as shown below window, and then exit the "Debug Mode" or "Download Mode" ?


C:\Keil\UV4\Uv4.exe
Debug section overlap! Please reference user manual.
Debug vector is 0x0033 and error address is 0x4002.
確定

A5: Because the user writes program file is out of "ROM code" range, please refer Note(2) in Page 14.

Q6: Why the user clicks on "Debug" button as shown below window, and then exit the "Debug Mode" ?



A6: Because the "Create HEX File" is not checked in "Output" option, please refer below figure.